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# TRANSLATIONS ON USSR INDUSTRIAL AFFAIRS

(FOUO 6/79)

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# TRANSLATIONS ON USSR INDUSTRIAL AFFAIRS

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## CONTENTS

METALLURGY

# SIBERIAN ALUMINUM COMES FROM ACHINSK

Moscow TSVETNYYE METALLY in Russian No 1, Jan 79 pp 1-14

[Article by P. F. Lomako]

[Text] Appearing before the members of the Irkutsk Oblast Committee of the CPSU on 2 April 1978, Secretary General of the Central Committee of the CPSU, Chairman of the Presidium of the Supreme Council of the USSR, Comrade Leonid Il'ich Brezhnev emphasized that the expansion of aluminum production, especially in the eastern part of the country, is among the largest problems of industrial development. This attention on the part of Comrade L. I. Brezhnev to aluminum is not a sign of the times. It is a continuation of the party line over the entire extent of the growth and development of the national economy of the USSR.

Czarist Russia did not produce aluminum. The first base for the development of aluminum production in Soviet Russia was the plan for electrification of the country--GOELRO--developed in 1920 under the direct supervision of V. I. Lenin, in which provision was made for the production of 9,800 tons of aluminum per year on the basis of the energy capacity that had been created.

In order to discover the reserves and the possibilities for the development of nonferrous metallurgy at the beginning of 1925, the First All-Union Conference on Nonferrous Metals was held at which the demand of the country for aluminum was determined, and important decisions were made regarding the further development of nonferrous metallurgy in the country. At this meeting it was noted that the demand for world aluminum which was increasing in the USSR and especially the demand for defense purposes was facing the Supreme Council of the Economy with the genuine necessity for immediate organization of metallurgical aluminum production in the USSR. There are rich reserves of aluminum raw material, sources of cheap hydroelectric power, natural raw material for the production of fluoride compounds and also carbon electrodes in the USSR. In the resolutions of the conference on aluminum extraction in the USSR, the following necessities were recognized: in 1925 it was necessary to prepare for the extraction of high-grade bauxite in the Tikhvinskiy Rayon and simultaneously to continue the exploration both in the Tikhvinskiy Rayon and other rayons of the Soviet Union. The following

was recognized as expedient: a) organization of the aluminum production in two stages, on a small plant scale in the first stage and proceeding directly also b) with obtaining the corresponding experience with respect to all individual production facilities to organize the industrial production of metallic aluminum.

In April 1925, the problem of the metal industry was specially investigated at the 14th All-Union Party Conference.

F. E. Dzerzhinskiy, arriving with a report at this conference, stated the following: "We have the so-called Tikhvinskiy bauxites required for the production of aluminum. We know what enormous significance aluminum has. The problem of setting up for aluminum production is the next goal."[1] This problem was solved successfully in a short time by the party and the Soviet people.

The 25th Congress of the All-Union Communist Party of Bol'sheviks held in December 1927 emphasized that special attention had to be given to the fastest implementation of the electrification plan, the development of ferrous and nonferrous metallurgy, that aluminum production had to be developed.

By resolution of the Council of Labor and Defense as of 2 August 1929, the decision was made basically to reexamine the rates of development of nonferrous metallurgy planned by the First Five-Year Plan, sharply to increase the extraction and the making of four of the main forms of nonferrous metals: copper, zinc, lead and aluminum, including aluminum in an amount four times the planned assignment for the five-year plan.

Sergey Mironovich Kirov gave a great deal of attention to the creation of the Soviet aluminum industry. With his personal active participation, the first project of the aluminum industry was constructed--the Volkhovskiy, now the Order of the October Revolution Aluminum Plant; he organized the aid to construction of the Dneprovskiy Aluminum Plant. These enterprises proudly bear the name of S. M. Kirov.

The first Soviet aluminum was obtained on an industrial scale at the Volkhovskiy Aluminum Plant on 14 May 1932. The 12th of June 1933 was the day of birth of the Dneprovskiy Aluminum Plant, and on 5 September 1939, the Urals Aluminum Plant--UAZ--produced the first aluminum. The construction and introduction into operation of other enterprises of the aluminum industry began after these plants.

The scientific and technical base for this new branch of production of nonferrous metals was also created simultaneously. In accordance with the resolutions of the Supreme Council of the National Economy by order of the

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1. IZVESTIYA TSIK SSSR (News of the Central Executive Committee of the USSR), No 98 (2431) as of 1 May 1925.

Soyuzalyuminiya, on 1 September 1931, two branch institutes were founded: the Scientific Research Aluminum Institute NIIalyuminiy and the Planning and Design Pinroalvuminiv Aluminum Institue subsequently combined into a united complex branch all-union scientific research and design institute of the aluminum, magnesium and electrode industry (VAMI).

During the difficult war years, the development of the Soviet aluminum industry continued at high rates. In January 1943, the first electrolyzers of the Novokuznetskiy Aluminum Plant began to produce aluminum, and on Victory Day, 9 May 1945, the Bogoslovskiy Aluminum Plant began production.

For successful fulfillment of the assignments of the government with respect to doubling the aluminum production, in the difficult year of 1942 and year of 1944 brightened by the victory salutes, by orders of the Presidium of the Supreme Council of the USSR, orders and medals were awarded to large groups of workers in nonferrous metallurgy, including aluminum production: Ye. P. Slavskiy, L. A. Bugarev, A. A. Gaylit, L. N. Bobkov, A. M. Elshteyn, S. M. Goncharenko, I. K. Strel'chenko, V. Ya. Chuprakov, L. I. Tanenbaum and many others.

The heart remembers the names of those who died and did much for the aluminum industry, Iustin Ivanovich Pertsev, Andrey Nikitovich Prokof'yev, Nikolay Stepanovich Pavlov, Iosif Isaakovich Pustil'nika, Aleksandr Iosifovich Zheleznov, Aleksey Vasil'yevich Pavlov, and many others.

Whereas in the prewar years the development of the aluminum industry was realized predominantly in the European part of the Soviet Union, during the difficult war years, the first aluminum plant began to be built in Siberia--the Novokuznetskiy Plant. Thus, the Soviet aluminum industry responded to the times, grew and matured, and in 1957, celebrating the 25th anniversary of the creation of this new production, we wrote in our journal (TSVETNYYE METALLY [Nonferrous Metals], No 3, 1957), that at the present time the Soviet Union had greatly exceeded the total production of the Federal Republic of Germany, France and England with respect to aluminum output.

During the postwar years, in accordance with our Leninist party line on the creation of a large industrial base in the eastern parts of the country, the USSR Ministry of Nonferrous Metallury began the construction of the powerful production complexes of the aluminum industry using the electric power from the Siberian energy giants--the Krasnoyarsk, Bratsk and also Irkutsk Hydroelectric Power Plants.

Plans were made for the construction in Eastern Siberia and Kazakhstan of enterprises differing significantly from the existing ones with respect to their capacity, technological innovation and creative application of the experience of the Soviet aluminum workers accumulated over a quarter of a century.

In the solution of this problem, a special role was played by the construction of the enterprises of the aluminum industry in the Krasnoyarsk Kray where it was planned to build the final complex including the first enterprise for the extraction of new aluminum raw material in Siberia, processing of it into alumina, soda products, cement and a plant for aluminum production based on the powerful Krasnoyarsk Hydroelectric Power Plant.

Accordingly, the experience in the planning, design, construction and assimilation of the unique complex enterprise in world practice--the Achinsk Alumina Combine--is of significant interest.

The raw material base--the base of the aluminum industry which was developing at high rates--has always enjoyed the fixed attention of the Central Committee of our party and the USSR Council of Ministers. In the approach to providing the necessary raw materials basic differences are felt between the Soviet Union and the capitalist countries. The aluminum companies of the United States, Canada, Japan, France and other capitalist countries use only bauxites for aluminum production, thus exploiting, as a rule, the richest deposits in the colonial and underdeveloped countries.

In the Soviet Union, as a result of many years of scientific research and experimental plant work, along with the broad use of bauxites, new types of aluminum raw material were used for the first time in the world to produce alumina: nepheline and alunites.

The industrial assimilation of the process equipment system for all around processing of nephelines to obtain alumina, soda products and cement in the 1950's at the Volkhovskiy Aluminum Plant was a great victory for the aluminum collective, the scientists and designers of VAMI and other institutes participating in the solution of the most important scientific and technical problem.

Accordingly, the theoretical possibility arose for the construction of the first large-scale alumina combine in Siberia on the basis of using this new type of aluminum ore raw material in the Krasnoyarsk Kray having significant nepheline ore deposits available.

The construction in the Krasonyarsk of the complex of enterprises therefore became the key problem of the development of the aluminum industry in Eastern Siberia.

The decision was made to build a large aluminum plant in Krasnoyarsk, alumina and cement plants, a limestone mine, and a thermoelectric power plant in Achinsk, and a mine in the Uzhurskiy Rayon, the nepheline ore of which required significant enrichment.

The Achinsk Alumina Plant (subsequently renamed as a combine) had to become the basic supplier of raw material for the Krasnoyarsk Aluminum Plant.

The selection of the location to build the alumina combine 3 kilometers from the city of Achinsk was the result of a careful study of all factors by the USSR Ministry of Nonferrous Metallurgy. These factors were the presence near the city of the Mazul'skoye limestone deposit and not far away, the deposits of nepheline ores, good areas for building industrial buildings and an essentially new city, a branched railroad network, good conditions for water supply for the enterprises from the Chulym River. Negative factors were also taken into account, the main one of which was the absence of enterprises of the construction industry and power supply industry both in Achinsk and adjacent regions. In selecting the site, we knew that it was necessary to solve these serious problems and also to gather personnel including builders and highly qualified workers in the future combine under the severe Siberian conditions.

The first volume of the Small Soviet Encyclopedia (fourth edition) published in 1958 stated the following about Achinsk: this is the center of the Achinsk Rayon of the Krasnoyarsk Kray of the RSFSR, on the Chulym River, it is a railroad junction, population 42,400 residents (1956), there is a milling combine, a meat combine, sewing and furniture plants, a machine shop and brewery.

I was in Achinsk before the beginning of the construction of the combine. The narrow streets of this small green city were lined with one and two-story, wooden buildings, and the small enterprises mentioned in the encyclopedia of the time needed the corresponding conditions which arose later only as a result of the construction of the alumina combine for their development. The dusty Moscow track ran through the center of town along which in 1826 the Decembrists were taken to penal servitude. A. P. Chekhov wrote about the lack of roads in Achinsk in his memoirs on his trip to Sakhalin. And this half asleep silence was to be broken to give life to Krasnoyarsk aluminum.

The enormous level site planned for construction, the thick beds of limestone near it were convincing evidence of the engineering grounds for selecting the place of the future giant--the Achinsk Alumina Combine. The certainty of this was also confirmed by the enthusiasm with which the city party and Soviet organizations headed by S. S. Putintsev and A. F. Vorozhko approached the future construction site. Even the residents of the town wanted passionately to convert their quiet Achinsk into a large industrial center of Eastern Siberia. Certainty of the correctness of the choice of site was needed because the group of workers of the USSR Gosplan introduced a proposal to move the construction of the plant from Achinsk south 50 kilometers to the vicinity of Nazarov, a significantly worse site with losses of many important advantages. Almost two years were lost on the fruitless dispute and it was only after the commission created under the chairmanship of Academician I. P. Bardin confirmed the correctness of the choice of site that it was possible to begin construction.

In 1955 a directorate was set up for the Achinsk Alumina Plant which was to be built. A highly qualified and energetic worker L. L Tanenbaum was named

director. Before this, he had worked as the chief mechanic of Volkhovskiy Aluminum Plant and had work experience in the alumina, soda-potash and cement production based on the new form of raw material--nepheline concentrate. The Achinskalyuminstroy Aluminum Construction Trust was organized simultaneously, the first director of which was also an experienced specialist, M. Ya. Levshakov.

In 1957, after reorganization of the administration of the national economy, I was named chairman of the Krasnoyarsk Sovnarkhoz. One of the priority matter of the sovnarkhoz was construction in Achinsk. The greatest complication was aroused by the fact that three different departments were involved with the erection of five basic enterprises--alumina and cement plants, a powerful thermoelectric power plant, limestone and nepheline mines.

In accordance with the presentation of the directorate of the alumina plant to be built, supported by the Krasnoyarsk Kray committee of the party, the sovnarkhoz made the decision to concentrate the construction administration in a single directorate. and this essentially became the beginning of the construction of the Achinsk Production-Territorial Complex. the largest in Krasnoyarsk Kray. The possibility appeared for the concentration of all resources and capacity of the construction organizations for implementation of an efficient construction plan. First of all, the construction of the enterprises of the building industry and the engineering structures of the combine in the city were started. Permanent residential quarters and all of the necessary institutions and enterprises of cultural-domestic significance--schools and kindergartens, dining rooms and stores, clubs and movie theaters--were built simultaneously. Then the construction of limestone and nepheline mines, the experimental alumina shop, cement and alumina production facilities began.

In 1958, vice president of the USSR Academy of Sciences, Academician I. P. Bardin arrived in Achinsk. He shared the impressions on this visit with the readers of the kray newspaper KRASNOYARSKIY RABOCHIY [Krasnoyarsk Worker) (No 11780, 1958): "I was at the alumina plant site in Achinsk which will be constructed on the basis of the uzhurskiye nephelines. The people there know what they are doing. I met with people who were familiar with Volkhov. These are experienced metallurgists." Now we know how correct the evaluation of the collective by Academician I. P. Bardin was.

Running somewhat ahead, I should like to note the correctness of the inclusion of the experimental alumina shop in the construction plan and the decision regarding the construction of residential space and the cultural-domestic and business projects simultaneously with the combine.

The enterprise management took on itself the function of a client of the city, its master plan for development and the draft of the detailed plan of the construction areas. The decision made regarding the construction of the experimental alumina plant was entirely justified (the process for

the future basic production was primarily developed here) as was the decision to build the permanent plant employee housing on municipal ground without requiring demolition, right next to the old city. The planned reconstruction of the old part of the city was started only after completion of construction of the new part.

In the years that have gone by an essentially new socialist city has been completely built in Achinsk. It has about 700,000 square meters of residential housing, 7 schools for 7,000 children, 19 preschool institutions accepting 4,500 children, an 800 capacity palace of culture and a stadium with swimming pool, hospitals, a polyclinic, a pioneer camp, a high-capacity bakery, stores, dining rooms, enterprises for domestic services and much much more, which promotes a good life for the combine workers and their families and a solution to the personnel problem.

However, all of this occurred later, and at the end of the 1950's the preparatory stage came; construction started at the site.

The Kray Committee of the CPSU and the Krasnoyarsk Sovnarkhoz, which systematically investigated and solved many of the problems directly in Achinsk and on site paid significant attention to the construction of the combine, especially in the initial period.

We are talking about primarily the creation of the necessary conditions for realizing large-scale construction of the enterprises with a total estimated cost of more than one billion rubles (in the current money values). In a short time two power trains with a capacity of 5,000 kilowatts were introduced which insured a stable power supply for the site and the city.

In solving the problems of preparing the construction base to build the combine, an important role was played by the construction managers in the sovnarkhoz M. D. Vorobiyevskiy, construction administration chief B. M. Zverev and chief engineer V. P. Abovskiy.

As a result of insufficiency of allocated capital investments, material and technical resources, construction equipment and transport means, the preparatory phase of the construction was stretched out.

Difficulties also arose in the creation of the large construction collective. The Krasnoyarsk Kraykom [Kray Committee] of the CPSU and the sovnarkhoz turned to the Central Committee of the CPSU and the USSR Council of Ministers for help during this difficult time.

At the end of 1959 the First Deputy Chairman of the USSR Council of Ministers, Chairman of the USSR Gosplan, A. N. Kosygin arrived in Krasnoyarsk with a large group of specialists.

From the results of this trip, measures were taken to intensify the construction of the Achinsk Alumina Combine. The most important of them were the

following: the decision to build the Kiya-Shaltyrskiy Nepheline Mine in the high-grade nepheline ore, ertite, deposits discovered at that time by geologists of the Western Siberian Administration A. S. Prusevich as the ore base; entrustment of the construction of the power projects to the USSR Ministry of Electric Power Plant Construction and the transport projects to the USSR Ministry of Railways and the Ministry of Transport Construction of the USSR along with other measures.

A proposal of the Central Committee of the All-Union Lenin Young Communist League to draft 10,000 young people for the construction site in the Krasnoyark Kray. The construction of the Achinsk Alumina Plant became a shock komsomol construction site!

Now when you basically see the completed construction and operating mines, plants and shops of the Achinsk Combine, you involuntarily remember February days of 1961 when the Krasnoyarsk Sovnarkhoz investigated and confirmed the precisely defined plan for the combine.

In advance, by request of the Krasnoyarsk Sovnarkhoz, the Pikalevskiy Alumina Combine, accumulating a great deal of experience at that time in the matter of complex processing nephelines, investigated a combine plan at its technical council. Not only the specialists of the Pikalevksiy Combine participated in the detailed investigation, but also the specialists of the Volkhov Aluminum Plant, the central organizations, VAMI and other scientific research and planning and design institutes.

With a significant number of useful remarks, the basic planning solutions and choice of equipment of the Achinsk Plant were approved. One comment--"To consider the open installation of the sintering and calcination furnaces unacceptable--was refuted by the sovnarkhoz. Life has confirmed the correctness of the solution adopted by the sovnarkhoz."

An investigation of the plan for the Achinsk Combine was a great event in the life of the Krasnoyarsk Sovnarkhoz, and, in essence, the entire kray. The leaders of the kray organizations, the best specialists of the enterprises, the planning, design and transport organizations and the power engineers were gathered in the office of the sovnarkhoz chairman.

In the combine the following were approved:

Two mining enterprises--Kiya-Shaltyrskiy Nepheline and Mazul'skiy Limestone Mines with a total extraction of the rock mass of 9.6 million cubic meters per year;

A powerful alumina plant equipped with modern high-output equipment, including ten rotating sintering furnaces 5 meters in diameter, 185 meters long, calcination furnaces with boiling layer refrigerators and other equipment used for the first time in the aluminum industry;

The largest soda plant in the country with soda products output of about 700,000 tons a year;

A cement plant with a capacity of more than 4.5 million tons of cement per year;

A thermal electric power plant with a capacity of 320,000 kilowatts providing the needs of the combine and the city with regard to steam and hot water;

The engineering building;

The mechanical repair base, including the foundry with a capaity of 30,000 tons steel and 16,000 tons cast iron castings per year.

Special attention was given to the development of the railroad and automobile transportation capable of accepting about 20 million tons of ore, coal and limestone and unloading 6 million tons of commodities.

In 1963-1964, the limestone mine and the first subphase of the nepheline mine, the mining preparation work at which was performed economically, were put into operation.

When constructing the mines, we encountered an energetic engineer, quite young at that time from the Glavkrasnoyarskstroy Main Administration A. A. Babenko, who later became head of the Achinskalyuminstroy Trust and who did much to accelerate construction of the combine.

The enterprises of the Krasnoyarsk Kray, rich with experienced miners, assisted the miners of the Achinsk Alumina Plant with their personnel. Arriving from the Noril'sk Mining and Metallurgical Combine, the Sorskiy Molybdenum Combine and other enterprises of the kray, the excavator drivers M. F Andronov, N. P. Yelfimov, V. Z. Likhachev, P. V. Arkhipov, G. I. Ramonov, N. A. Safronov, the operators of the drilling rigs V. S. Skripkin, V. A. Kolchanov, N. T. Alekseyev, the mine foremen A. F. Sorokin, V. A. Kaykov, V. A. Saprykin and others became the first personnel around which the collectives of the two mines of the combine are formed. The timely performance of the mine preparation work and the uninterrupted provision of the combine with nepheline ore and limestone of appropriate quality became the law of operation of these collectives.

The young engineers M. M. Chikhachev, V. D. Volkov, N. I. Zakharchenko skillfully directed the operation of the mines and the training of experienced miners.

The introduction of the experimental alumina shop in 1964 where the process equipment systems of the combine were worked out promoted the formation of a pioneer collective of Achinsk alumina workers.

More than 200 young workers and 80 engineers working in the experimental shop became the backbone of the collective of the future large-scale plant.

In 1962 a group of young engineers, graduates of Irkutsk Polytechnic Institute were invited to work in the experimental shop directed by engineer B. A. Polovnikov. Later graduates of the Institute of Nonferrous Metals imeni M. I. Kalinin and other Siberian institutes arrived.

Many of them traveled the long production path and in the years that have passed, they have become experienced, highly qualified specialists working with the management engineering duties at the combine.

Graduating in 1962 from the institute, Ye. I. Mironov worked for 7 years in the experimental shop, traveling the path from an ordinary engineer to chief of the experimental shop, and in 1972 he became chief of one of the basic shops of the combine--the hydrochemistry shop.

F. G. Metelkin arrived at the combine in 1967 after graduating from the Krasnoyarsk Institute of Nonferrous Metals. He went through the good production school in the experimental alumina shop. Now he works as chief of the calcined soda shop.

G. M. Nesteruk came to the combine as an operator; in 1968 he graduated from the Krasnoyarsk Institute of Nonferrous Metals, he worked in the experimental alumina shop, he is now chief of the shop for the production of secondary fluoride salts. The same path was traveled at the combine by engineers Yu. G. Gaydamakin, who began work in 1963 as a fitter, and in 1975 became chief of the sintering shop, N. P. Kolesnik, who was deputy chief mechanical engineer of the combine, G. P. Logachev, chief of the production engineering division of the combine, and many others.

An important role in training the labor and engineering personnel for the Achinsk alumina combine was played by the professional-engineering school which was introduced in 1965, graduated and sent to the combine 3600 young workers, and the Achinsk Polytechnical School which opened in 1970 and also sent 765 specialists trained there to the combine collective.

The 1960's are characterized by the beginning of the stormy development of industrial construction in Siberia. The bread of construction--cement--was used for the new construction projects. Therefore the priority for introducing cement production into operation was written into the plan.

The construction of two large process lines for cement production with a capacity of 1.6 million tons and introduction of them into operation on the 20th anniversary of the victory of 9 May 1965, was a serious test and success for the collective of builders and the plant.

The two installed process lines with rotary furnaces 5.8, 4.8 and 5.3 meters in diameter and 175 m long were purchased from the French company "Fiv, Lill'" as models of the most modern and powerful equipment.

In order to accelerate the assembly of the furnace shells, it was decided to purchase shells and all-welded tires up to seven meters in diameter weighing up to 90 tons from the company, previously welded, treated and ready for installation. A special transport system was set up for delivery of these enormous parts to the site: by sea from Antwerp to Murmansk, then on ships along the Northern Sea Lanes; and via the Yenisey to Igarka. In the vicinity of Igarka the merchant ships were unloaded onto specially reinforced barges of the Yenisey shipping line. North of Krasnoyarsk, the parts were unloaded and warehoused. The route of the winter road to Achinsk about 200 km long was specially prepared in the summer.

This was a very difficult, transport operation essentially executed for the first time. The winter of 1960 was a severe winter. The freezes to -50 degrees C were long, and on some days they were accompanied by high wind. The sleighs with the parts running up to 90 tons were pulled by 140 horse power tractors. The best tractor drivers worked around the clock in the Taiga and in the field A. M. Yermolenko, N. A. Usov, I. A. Tolpyga, S. Ye. Smakhtin, P. V. Vremenshchikov, and L. M. Khmelev, and many others.

We traveled the winter road already at the beginning of this complex operation. The tractor drivers, truck drivers, track workers all worked with unprecedented enthusiasm. Through the cold and snow drifts the height of a two story building, the heavily ladened sleighs moved toward Achinsk. The steel cables and caterpillar tracks could not stand the strain and snapped, and the workers, led by the communists, overcoming blizzards and frost carried out their jobs. All of the workers on the route were issued winter clothing and special feeding was organized. In the villages along the way places to warm up and rest were set up. The freezes grew harder, and a significant part of the cargo still remained on the Yenisey. Additional help was needed. Returning to Krasnoyarsk, I telephoned the commander of the Siberian Military District, General of the Army, subsequently Marshal, twice Hero of the Soviet Union P. K. Koshev. The discussion was short. Petr Krillovich has understanding for the needs of the metallurgists. All of the problems were solved as if in wartime, and the tank drivers of the Siberian Military District came to our aid in this difficult moment.

The goal was accomplished on time. Three thousand tons of heavy parts ready for installation were delivered to the foundations of the cement plants. This made it possible to assemble the furnaces quickly and with high quality.

The construction of the cement production shops proceeded round the clock. The "Achinsk climate" was set up in the work between the contract organizations and the customer. At that time the Achinskalyuminstroy Trust was directed by G. G. Smirnov and V. D. Gavrilov. Mutual assistance and operative solution of the problems that arose became the law of the construction site. The Achinsk Gorkom [Municipal Committee] of the CPSU and its secretaries

V. I. Popov and P. S. Ryabov rendered great assistance to the builders.

The construction in Achinsk was under constant supervision, and it enjoyed all of the support of the Krasnoyarsk Kraykom of the CPSU and its secretaries N. N. Organov and A. A. Kokarev. The director of the Krasnoyarsk Sovnarkhoz paid a great deal of attention to the construction of the combine; responsible and experienced workers of the sovnarkhoz, including A. D. Bizyayev, N. T. Glushkov, V. N. Ksintaris, and others went to Achinsk with me for operative solution of the problems.

In 1965, the startup for year for Achinsk, up to 75,000 tons of cement were produced per month, and in 1966 the cement production volume was about 800,000 tons; in 1971 it was 1,334,000 tons, and in 1977, 2,128,000 tons.

At the end of 1965 the newly organized Ministry of Nonferrous Metallurgy of the USSR was faced with the problem of accelerating the construction of the alumina production facility in Achinsk.

It was necessary first of all significantly to increase the volume of construction and installation work performed at the site.

The ministers of nonferrous metallurgy, construction of enterprises of heavy industry, installation and specialized construction operations visited the combine for joint solution of the problems on site.

The first startup complex of the alumina production which amounted to 30 percent of the planned capacity, was broken down into subcomplexes, the construction of which was directed by the experienced builders and workers of the combine.

By direction of the USSR Council of Ministers, Deputy Chairman of the USSR Council of Ministers V. E. Dymshits, who rendered a great deal of aid in the matter of accelerating the construction of the combine, visited the plant site with a large group of specialists.

It became obvious that for the decisive phase in the construction of the combine--completion of the construction of the basic shops for alumina and soda-potash production and the electric power plants--additional help was needed. It was necessary to double the volume of construction and installation work on the first phase in one to two years.

The USSR Council of Ministers adopted a resolution in September 1966 on measures to intensify construction of the Achinsk Alumina Plant, and in April 1967, another resolution for additional measures to help the construction of the Achinsk Alumina Plant and the Kiya-Shaltyrskiy Nepheline Mine. These were documents encompassing all the problems of the construction and introduction of the capacity, the creation and significant improvement of the working conditions and life of the builders and combine workers.

The construction went into the final phase. The organizational work of the ministries was intensified.

The USSR Ministry of Nonferrous Metallurgy, the USSR Ministry of Heavy Construction and the USSR Ministry of Installation, Heavy and Specialized Construction organized the construction headquarters at the construction site, entrusting the management to deputy chief of the Glavkrasnoyarskstroy Main Administration, V. M. Vid'manov, and deputy chief of the Glavayuminiya L. I. Tanenbaum.

The systematic arrival in Achinsk of the deputy ministers I. A. Strigin, Yu. P. Voronenkov, L. V. Kozlov, M. A. Shil'dkrot and K. S. Kochanov promoted the solution of the problems of providing the site with resources, involvement of the new podrazdeleniye of builders and installation people in construction, buildup of the volume of construction and installation work performed.

The concentration of forces and means in the decisive sections was provided for--the sintering shops, hydrochemistry, the soda-potash production. The stressed labor of the builders, the daily construction chart and its daily checking by the directors of the headquarters and construction--became the law of the construction site. A great deal of significance was attached to coordination of the work and mutual assistance of the numerous organizations.

In 1969, the volume of construction and installation work done on the site increased to 67 million rubles. Up to 15,000 people worked at the site.

It was usual that the young construction directors, working a great deal and fruitfully on the construction of the Achinsk plant, A. A. Babenko, V. M. Zid'manov, O. S. Shenin, I. A. Sayenko and others became important economic and party leaders. High organization was manifested by the chiefs of the construction and installation podrazdeleniye V. P. Bolbat, V. P. Biryukov, N. A. Dement'yev, O. Ya. Aniskin, M. S. Simakov, Yu. N. Baranov, and others.

The introduction of the first phase of the alumina production was realized by the 100th birthday of V. I. Lenin, 22 April 1970, in organized fashion and without emergencies. After this in 1970 to 1971, the entire capacity of the combine was put into operation with respect to alumina.

When the period of assimilation of the new production came, difficulties arose continuously for all of the collective of alumina workers. The basic causes of these difficulties were the following: the introduction of large capacity with respect to alumina production with respect to a complex flow chart for a short period of time--with ten sintering furnaces, serious defects in the delivered equipment; low quality and failure to correspond to the working conditions of the support for the housings and raisers of the rotary furnaces and also the fire bar coolers, the carousel filters, the centrifuge and other equipment.

Insufficient training of the young process personnel, frequent violation of the technological process instructions by them, high rate of emergencies with the equipment and failure to observe the planned preventive maintenance repairs were felt.

In the first phase, this pertained to the sintering furnaces with peripheral equipment. During alumina production by the sintering method, the continuous operation of the furnaces sets the production rhythm for operation of the preceding and following furnaces without shutdown. The frequent halts of the furnaces interferred with the operation of all of the shops. The combine became feverish. The alumina production volume increased inadmissibly slowly.

The management of the ministry locally performed a detailed study of the causes of unsatisfactory operation of the combine. The elimination of the hidden deficiencies and acceleration of the assimilation of the introduced capacity required immediate, significant assistance from the machine building ministries--the suppliers of the equipment, the construction and installation organizations, the USSR Gosplan, the USSR Gossnab and other ministries and departments.

In February 1971, a large, representative group of directors of 11 ministries and a number of departments were working at the combine under the direction of Deputy Chairman of the USSR Council of Ministers N. A. Tikhonov. In addition to myself, the ministers of the USSR N. V. Goldin, F. B. Yakubovskiy, Ye. S. Novoselov, K. I. Brekhov, Deputy Chairman of the USSR Gosplan M. A. Pertsev, and so on participated in this work.

A great deal of assistance in the work and in subsequent assimilation of the capacity of the combine was rendered by the Krasnoyarsk Kray Committee of the CPSU and its first secretary, metallurgical engineer with great experience V. I. Dolgikh, who participated directly as part of the basic work group and also the Achinskiy Municipal Committee of the CPSU at that time headed by V. V. Plisov.

Theoretical solutions were found with respect to the finishing and adjustment of the basic equipment, the completion of the construction of individual projects. Material and technical aid measures were defined. These solutions lay at the basis of the large-scale, broad program for assimilation of each unit, division and production shop.

The ministry began planned, carefully controlled work with respect to volume and time for elimination of the discovered deficiences and assimilation of the combine capacity. For this purpose, in March 1971, 18 working brigades were organized which included the specialists of the administration and the main administrations fo the ministry, the scientists of the branch institutes, the party workers of the Krasnoyarsk Kraykom and the Achinsk Gorkom of the CPSU.

The brigades were headed by the chief and the chief engineer of Glavalyuminya, directors of the enterprises and institutes. Defined production divisions were attached to each brigade.

The work of the brigade of the VAMI Institute, numbering 60 people in 1971 to 1972, was directed for a long time by institute director N. A. Klauzhskiy, chief engineer N. S. Shmorgunenko, chief project engineer N. V. Romanov, V. M. Sizyakov and other highly qualified specialists of the institute. Here, locally and jointly with the combine specialists all the problems were solved: technological process, production and equipment. A brigade was organized with respect to activation of socialist competition at the combine in honor of the forthcoming 24th Congress of the CPSU.

The activity of this brigade, which included the workers of the TsNOTtsvetmet and the Tsvetmetinformatsiya Institute was controlled by the ministry constantly. The brigade members did a great deal of work at the combine. They organized transmissions over Krasnoyarsk radio and television about the combine and its people. They prepared 12 photographic displays, including the critical "National Control" and "What Is Interferring with the Work?" The brigade members supplied more than 30 items for publication in the municipal Achinsk newspaper LENINSKIY PUT' from 13 March to 10 April.

The ministry director systematically inspected the course of the assimilation of the combine capacity. The most important organizational and technical measures were defined, as a rule, by the orders of the minister locally.

At that time, in addition to meetings with the combine workers in the shops and at the construction sites, I also participated in the social measures performed at the combine. The conference of young specialists and innovators which was held at the palace of culture of the combine on 17 March 1971 is especially remembered. By the initiative of the committee of the All-Union Lenin Young Communists League, the conference participants issued a call to all of the combine specialists who organized a technical patronage over the lagging brigades and sections. The patronage brigades created basically from young specialists rendered significant aid in the fastest assimilation of the technological processes, equipment and machinery.

On 17 April 1971, on the day of Leninist Communist Subbotnik [unpaid mass work], the veteran metallurgists and young builders of Achinsk worked enthusiastically on the construction projects. In the evening, a meeting of the generations was held at the palace of culture of the combine. This was an exciting meeting for the builders of communism, people of different ages but joined by one idea, one effort--to accelerate the introduction of the first Siberian alumina production facility into operation--the Achinsk giant!

On that evening I had an extraordinarily complimentary and pleasant mission--in the name of the Presidium of the Supreme Council of the USSR, I conferred the Order of the Red Banner of Labor on the collective of the Achinskalyuminstroy Trust.

The relations between the suppliers and the subcontractors were reinforced. Significant assistance in improving the operation of the combine equipment was given by the USSR Ministry of Construction and Road Machinery and its

directors Ye. S. Novoselov, V. S. Zameshayev, L. K. Antonov, G. S. Yakovchik, the USSR Ministry of Chemical Machinery K. I. Brekhov, A. G. Rutskoy; the Minister of Light Industry of the USSR N. N. Tarasov assisted in selecting the most economical filtering material.

A good example of the clear interaction of the various subcontractor departments is the relations formed at that time with the ministries of construction and road machine building, heavy machine building and the automobile industry, chemical and petroleum machine building, and light industry.

The poor operation of the furnace supports on which the slide bearings were installed was a serious problem. The supports failed now and then. The ministry proposed and agreed on with the USSR Ministry of Construction and Road Machinery, the USSR Ministry of Heavy Machinery and the USSR Ministry of the Automobile Industry, a program for conversion of all of the furnaces of the Achinsk Alumina Combine in a short time to supports with roller bearings. This was a radical solution for ensuring continuous operation of the rotary furnaces. At that time there was only one experimental shop in the Soviet Union working on supports with roller bearings. In a short time it was necessary to organize the production of such supports, large roller bearings and forgings for them for 10 furnaces. The solution of this problem required the participation of all of the enumerated ministries. I turned to the ministers Ye. S. Novoselov, V. F. Zhigalin, A. M. Tarasov, and in a short time developed and confirmed with them a schedule for conversion of all of the combine shops to the new supports. The details were remembered: the combine workers were alarmed by the large scale, complex program with respect to technical execution, and they made the request to replace the supports first only on one furnace. After repeated consideration, we refused the combine this request and demanded execution of the work on all furnaces in accordance with the schedule. The VAMI and combine workers N. S. Shmorgunenko, L. I. Finkel'shteyn, Yu. A. Taldykin, V. V. Krasavin, N. P. Kolesnik, Yu. G. Gaydamakin, Ya. K. Kuriksha and A. M. Yefimov, being convinced of the good results of using the new supports, in a short time performed a great deal of work to develop structural elements and manufacture the roller bearings directly at the repair base of the combine with the use of a number of parts from the dismantled supports. The engineers and the industrial workers at the combine performed their jobs in the times provided for by the schedule, and the application of the high capacity supports with roller bearings provided stable operation of the sintering furnaces and other units.

The Glavalyuminiye, the combine and the VAMI Institute together with the corresponding organizations performed systematic work at the plant to solve a number of important problems of improving the process and the operation of the equipment: elimination of the most serious deficiencies in preparing the raw material charge, improvement of the fire grate coolers, selection of the most stable lining, increasing the service life of the furnace heads, the structural elements of the carousel filters, and so on.

By proposal of Glavalyuminiye, VAMI and the combine, the ministry adopted a resolution to build an additional leaching out section for increasing the extraction of alumina and alkali and preparation of the nepheline slurry for pumping through a pipeline to the cement plant.

During this period, the attention given by Glavalyuminiye (and then the Soyuzalyuminiye) to the work of the combine increased, the necessary assistance was given. The directors and specialists of Glavalyuminiye were systematically at the combine: A. A. Volodin, M. I. Zaytsev, L. I. Tanenbaum, G. I. Vol'fson, A. K. Styazhkin, P. F. Belonogov, L. B. Samaryanov, I. A. Troitskiy and so on.

The relations of VAMI to the combine were reinforced. In the difficult years for the combine from 1972 to 1973, N. S. Shmorgunenko performed the duties of chief engineer of the combine.

The introduction of the subcontract method of plan preventive repair work on the equipment by the forces of the ministerial centralized organizations at the combine [Soyuztsvetmetremont, Sibenergotsvetmet, Energotsvetmetgazoochistka) had decisive significance in improving the operation of the equipment.

The runs between repairs were increased, and the repair times for the equipment were reduced, the emergencies were reduced, the quality of the repair was improved, and small deficiencies in the structural elements of the equipment were eliminated.

A great contribution to this matter was made by the ministry workers, the organizations and the combine F. L. El'tsev, O. N. Bagrov, A. G. Moroz, V. V. Drozdov, M. I. Kapustin, I. S. Zverev, N. S. Zasypkin, A. G. Tarnovskiy, and so on.

In solving the basic problems of the assimilation of the combine in improvement of the construction and quality of the basic equipment units, an important role was played by the Achinsk repair base: the manufacture by their forces of part of the furnace supports with roller bearings, the organization of the production of castings for parts made of high-temperature steel, the assimilation of a large nomenclature of spare parts and assemblies, the manufacture of the complete GR type pumps--this is an incomplete list of the principal operations performed by the repair base.

The ministry and the Krasnoyarsk Kray Committee of the CPSU also took measures to strengthen the combine management.

The naming of G. P. Tkachenko as combine director in 1971, the election of I. M. Chupriyanov as secretary of the party committee, who had worked since 1976 as combine director, the naming of L. I. Finkel'shteyn as chief engineer in 1973--all of these events significantly improved the work of the highest link in the combine administration. The direction of the basic shops was

strengthened. A. F. Anikanov, V. V. Krasavin, Ye. I. Mironov, Yu. G. Gaydamakki, A. I. Afanas'yev, F. G. Metelkin began to work with great knowledge of the matter, mobilizing the collectives of the shops directed by them to overcome the rising difficulties.

The basic services and divisions of the combine headed by young engineers and experienced specialists who had come to the combines at the beginning of the nineteen sixties were reinforced: V. K. Valun, Yu. A. Taldykin, V. G. Mikhaylenko, A. M. Sidorenko, V. I. Yefimov, A. V. Chashchin, A. I. Sichkar. The heat and electric power plant of the combine directed by V. M. Chaykovskiy, who also began his career as a young engineer in the combine, is operating stably.

However, the elimination of the existing deficiences and improvement of the operation of the combine has still been realized slowly, and they have not provided the necessary results. In 1972, the combine produced 65 percent more alumina than in 1971, but this amounted to only 34 percent of the introduced planned capacity.

In July 1973 the deputy ministers L. V. Kozlov and V. N. Ksintaris went to the combine. They analyzed the problems of supporting the stable operation of the combine in detail with the group of workers of the ministry and combine directors.

The main thing that was proved and which was pointed out to the combine director was the presence of a number of cases of inappropriate attitude toward process discipline, the operation and maintenance of the equipment and the acceptance of it for repairs. What has been noticed is the unsatisfactory work with the personnel, serious deficiences in the organization of the work of the managerial staff and still insufficient educational work. The testing discovered the deficiences also in the arrangement and use of the existing engineering-technical personnel. These problems became the subject of serious investigation with the combine directors. Planned work was organized to eliminate even these latent deficiencies in the organization of the work of the combine.

This paper by the entire combine collective, its economic, party and trade union leaders and organizations, the broad measures for rendering aid pointed out by the ministry, improvement of the managerial role of Soyuzaluminiya and active participation of the VAMI institute have demonstrated their positive results.

The use coefficient for the ten sintering furnaces reached 88 percent, as opposed to those provided for by the plan of 83 percent.

The combine and Sibtsvetmetremont repair these furnaces, as a rule, in nine days at the same time as at a number of enterprises the rotary furnaces are idle in repair for an appreciably longer time. However, the output capacity of the sintering furnaces still does not exceed 96-98 percent of the planned amount. Only as a result of a high use coefficient of the

furnaces has the plan volume of production of cake going for refining been reached.

The planning indexes with respect to output capacity of the alumina calcination furnaces have been covered. The planning indexes with respect to the thermal energy consumption for alumina production, fuel and electric power for the production of soda products and fuel for cement production have been achieved.

The production of type G-1 alumina has been assimilated instead of the alumina production of only type G-2 instead of the investigated plan.

The combine has solved an important problem not provided for by the plan--the production of secondary cryolite from coal waste of the aluminum plants has been organized and assimilated. Here the problem of use of all of the fluorine containing waste, contaminating the environment has been solved.

In 1975 the combine began to work profitably, and in 1977, for more than 10 million rubles of profit. This was an enormous victory for the combine collective, the ministry, the Krasnoyarsk Kraykom of the CPSU.

Today the Achinsk Alumina Combine is the largest advanced enterprise of nonferrous metallurgy with a collective of many thousands.

From the Achinsk Alumina several millions of tons of aluminum have already been obtained at the Krasnoyarsk Aluminum Plant, and more than 3 million tons of soda products have been produced at the same time along with ~20 million tons of cement. The Ural, Bogoslovskiy, and Pavlodar Aluminum Plants operate, applying the calcine soda only of the Achinskiy Combine. As a result of the jointly performed experimental plant tests, the Noril'sk Mining and Metallurgical Combine also uses most of the Achinsk soda.

The director of the ministry, the central committee of the trade unions of workers in the metallurgical industry, the Soyuzaluminiye, the combine collective are doing a great deal of organizational work with respect to implementing the calls discussed in the letter of the Central Committee of the CPSU, the Council of Ministers of the USSR, the All-Union Central Trade Union Council and the Central Committee of the All-Union Lenin Young Communists League on the development of socialist competition for the fulfillment and overfulfillment of the 1978 plan and intensification of the struggle to increase the production efficiency and operating quality.

Measures have been developed with respect to the ensurance of the fulfillment of the adopted socialist obligations. The work of the headquarters with respect to the daily summing of the results has been directed by combine director I. M. Chupriyanov.

The adopted obligations are specific and purposeful. The annual assignments and socialist obligations were fulfilled ahead of time by the advanced

collectives: Kiya-Shaltyrskiy Mine, the cement plant, the heat and electric power plant, the repair base.

The brigade of sintering furnace No 8 under the direction of A. N. Bezrukov achieved high output capacity of the furnace, essentially on the design level. The brigades of furnaces Nos 5 and 7 are working successfully (where the brigade leaders are A. P. Patov and A. D. Korytko). The advanced production workers are well known at the combine: M. Ye. Khalaleyev, Ye. A. Topolevskiy, V. A. Molchanov, N. I. Osipov, V. K. Lomayev, A. N. Smirnov, S. F. Portnikov, A. I. Semel, V. R. Shepelev, and so on.

Eighteen brigades, two units, one section, and 16 excavator crews have successfully fulfilled their obligations--they have completed the plans for three years of the Tenth Five-Year Plan by the first anniversary of adoption of the new constitution. In addition, 504 industrial workers have completed their socialist obligations with respect to early fulfillment of the plans for three years to Constitution Day.

The Achinsk Alumina Combine is competing with the Krasnoyarsk Aluminum Plant, the Achinsk-II Railroad Station, the collective of builders of the Achinskalyuminstroy Trust. A great deal of work is being done with respect to rendering aid to the Krasnoyarsk Aluminum Plant for the production of the mechanical repair base.

According to the results of the work in the second quarter of 1978, the ministry and the central committee of the trade union have awarded the combine first prize and the Challenge Red Banner of the ministry and central committee of the trade union of workers of the metallurgical industry.

In March 1978, the combine was visited by Chairman of the USSR Council of Ministers A. N. Kosygin and his deputies M. K. Baybakov and V. E. Dymshits.

Comrade A. N. Kosygin stated specific goals with respect to the completion of construction and significant expansion of the combine, completion of the assimilation of its design capacity and conversion of it to a model enterprise.

The nearest and the main goal of the combine collective is achievement of the capacity established by the plan. For this purpose it is necessary more broadly to develop socialist competition, to raise the output capacity of the sintering furnaces, increase the extraction of alumina and soda products to the level provided for by the plan. The fastest completion of construction and the introduction of the leaching out division and the third cement plant with coal dust separation will to a significant degree promote the solution of this primary problem.

For the realization of these goals it is necessary to improve the organizational work with respect to all control units of the combine, its services,

plants, and shops and to reinforce the progress made by the advanced production workers, transmit their experience and mastery to all of the brigades, sections and accelerate the assimilation of the design capacity of the combine. All of the directors and the entire collective of the combine must work in this direction.

In 1979, the combine must master the design capacity. This is what they must work on, and this is what the glorious Achinsk people must ensure in the coming year!

Accordingly, it is necessary comprehensively to accelerate construction and introduce cement furnaces Nos 4 and 5 which will permit a significant increase in use of the nepheline slurry and, consequently, the capital returns on profitability of the combine.

Now when the communists and all Soviet people are equipped with such party books as MALAYA ZEMLYA, VOZROZHDENIYE and TSELINA, it is necessary again and again critically and creatively to evaluate what has been done and determine how in the shortest time with the least expenditure of means and resources to solve the stated problems.

In the book VOZROZHDENIYE, L. I. Brezhnev writes: "Remembering my work in those years, sorting by memory the many meetings with people, I see that in them I valued primarily persistence, and independence of thought, competence, and sharp sense of the new, skill in taking and holding the initiative and creativity of the masses. It must be stated that even today these qualities, if you like, this style of activity are most needed by us."

The entire program determining the party requirements with respect to style and quality of work has been set up on this idea of L. I. Brezhnev.

During the trip to Siberia and the Far East, L. I. Brezhnev planned specific goals also in the matter of the further development of the aluminum industry.

The sacred duty of the Achinsk metallurgists is to accelerate the solution of the stated problems facing them: to work better, in a short time bring production culture to a high level, achieve and cover the introduced capacity and finally develop them at accelerated rates.

The Soyuzalyuminiy Association and the VAMI Institute must comprehensively help the combine in the solution of these problems and jointly with its collective find the most economical solutions for subsequent significant expansion of the combine with respect to the production of both alumina and cement and soda products.

The design, construction and assimilation of the Achinsk Alumina Combine is the largest completed complex is a grade school for the workers in nonferrous metallurgy and, above all, for the aluminum industry.

The completion of construction, its significant expansion and the creative assimilation of the enormous experience of this glorious combine and its collective constitute the most important goal for all of nonferrous metallurgy of our country and its largest region--the Krasnoyarsk Kray.

> ...Special attention must be directed toward improving the productivity of labor, the introduction of the achievements of science and advanced experience, new equipment and technology into production, putting the available reserves and capacities into operation to increase output and raise the technical level of production with minimum expenditures.
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> Materials of the November (1978) Plenum of the Central Committee of the CPSU



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# ACCOMPLISHMENTS OF THE ZAPOROZH'YE TITANIUM-MAGNESIUM COMBINE

Moscow TSVETNYYE METALLY in Russian No 1, Jan 79 pp 22-25

[Article by A. A. Gorodokin]

[Text] The Zaporozh'ye Order of Lenin and the Order of the Red Banner of Labor Titanium-Magnesium Combine is one of the advanced enterprises of Soviet nonferrous metallurgy. For more than 12 years the metallurgists of the Zaporozh'ye Titanium-Magnesium Combine have led the all-union socialist competition; twice the enterprise received the highest honor--it was entered on the All-Union Board of Honor.

The fame of the Zaporozh'ye Titanium-Magnesium Combine dates from the pre-war years when here on the banks of the Dnepr at the energy base of the Dneproges Hydroelectric Power Plant, the Soviet magnesium industry was born. Here several years after starting up, the enterprise has covered the design capacity and has begun to supply the national economy with metal which should be with good reason called the bread of engine building.

To construct a plant such as we have never had before, to organize an entirely new production facility in the country not having any experience with it, with no possibility for using the experience of foreign companies, with low technical training in those years of the engineers and industrial workers--this was an enormous achievement. In spite of the difficulties, very soon the Zaporozh'ye magnesium workers were able to leave the German monopolies behind with respect to a number of indexes. In 1939, the Dneprovskiy Magnesium Plant had already given a sixth of the magnesium produced in the entire world.

The Order of the Red Banner of Labor which at that time was awarded to the collective is a high evaluation of its merit to the homeland.

After World War II, Zaporozh'ye metallurgists carried out another most important government assignment: they assimilated the large-scale industrial production of titanium, and they began to produce semiconductor materials--germanium and silicon.

The excellent labor traditions of the combine are growing and developing.

The newspaper PRAVDA[1] wrote in the lead article: "Twenty-five apartments in a row were first among their equals--this is a difficult, genuine labor feat."

Not so long before this, the combine collective was awarded the second highest government award--the Order of Lenin--for successful fulfillment of the assignments of the Eighth Five-Year Plan with respect to titanium and magnesium production, the completion of the technological processes and the assimilation of the production of new types of products.

What is the secret of this enviable stability of success? "First of all," wrote PRAVDA, "the atmosphere of creative search, constant purposefulness of the collective with regard to the achievement of the highest output capacity and production efficiency attract attention."

Thus, mass creative search...

In the case of broad participation of the industrial workers, engineering and technical workers and the office workers, broad organizational and technical programs, both long range and designed for the year, are being developed. They include the mutually coordinated measures of a research nature and the work on introducing technical development of the enterprise with respect to various plans and measures to improve the economic incentives of technical progress.

A characteristic feature of the growth of production at the combine lies in its intensity. It takes place as a result of broad introduction of advanced processes and improvement of the equipment system, automation of production and control and also the mechanization of the heavy, tedious manual labor, replacement of the units with more modern ones. The reconstruction of the shops, sections and individual units is realized with minimum capital investments.

Thus, in recent years a furnace for continuous coking of briquettes by natural gas, the roofs for covering the ore heating furnaces for making titanium slags have been installed, the melting of the slags in the semi-closed regime was introduced. The low-output shaft electric furnaces for chlorination of the titanium-containing briquettes have been replaced by shaft chlorinators which provide for continuous unloading of the cinders. Great progress has been made in purifying the titanium tetrachloride--the initial product for obtaining sponge titanium.

In 1969, the first titanium and magnesium in the Soviet Union produced by the combine received the state symbol of quality. Whereas in 1971 only

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1. PRAVDA, 1972, 26 July, page 1.

two types of production were certified with respect to the highest quality category, which amounted to 6.5 percent of the total production, in the second quarter of 1978 the proportion of the production of the highest condition exceeded 45 percent, and 52 types of production were produced with the symbol of quality. The state symbol of quality was warded to 118 types of products, for the production of which the production combine is used. One of the components of progress is mass technical creativity which is considered at the combine as the problem of problems, as the means cementing the collective together.

At the enterprise not only is creative initiative rewarded and directed, but also practical aid is given to the workers and specialists needed to solve the problem.

The assistance to inventors and efficiency experts in developing documentation has exceptional significance. For this purpose, already in 1960 a social construction office was created, in the work of which 150 experimental engineers and young specialists participated experimentally, and 23 groups of the special design offices are functioning in all shops.

It is known how important it is to call on the young specialists for technical creativity. Their participation in the experimental design office is not the only form of rewarding creative initiative. The young metallurgists of the combine are included in the complex creative brigades where they, working in close contact with the experimental workers, reinforce their professional knowledge, acquire skills and experience in creative thought. This excellent school has been attended by thousands of foremen, furnace tenders, furnace operators, instrument control men, who grew solidly into the collective and became an example for the novices to follow.

The creative atmosphere at the enterprise promotes the fact that for many specialists a broad road to science is opening up here: in the last 15 years, 60 candidates of sciences and two doctors of sciences were trained at the combine.

The central scientific research laboratories of silicon and germanium directed by doctor of technical sciences, Professor E. S. Fal'kevich and candidate of technical sciences D. I. Levinzon; the strength of the laboratory producing titanium and magnesium are gathering their strength. The scientists are conducting research, included not only in the plans of the committee but also provided for by the plans of the Ministry of Nonferrous Metallurgy of the USSR and even the union plan. The majority of dissertations of the combine workers and, as a rule, the results of them find broad application in production.

The scientists are also heads of the Soviet production and administrative podrazdeleniye and the enterprise services, technical and production divisions, the division of automated control systems and mechanization.

The science of titanium and magnesium has won broad recognition. Last year was especially productive in this respect: for the development broad industrial introduction of new high-efficiency equipment--a diaphragmless electrolyzer and a process for obtaining magnesium--candidates of technical sciences, production division chief A. P. Yegorov and Secretary of the Party Committee A. P. Bogdanov were awarded the USSR State Prize. Recently President of the Ukrainian SSR Academy of Sciences, Academician B. Ye. Paton awarded the State Prize of the Ukrainian SSR of 1977 to seven more combine workers, including the former director--Deputy Minister V. S. Ustinov.

As a result of introducing the new equipment for the Eigth, Ninth and two years of the Tenth Five-Year Plan alone, about 35 million rubles were saved, approximately as much savings came from using the efficiency proposals, inhouse and borrowed inventions. More than 3.5 million rubles were saved as a result of introducing the scientific and technical achievements and advanced experience emphasized from the sources of the scientific and technical information and propaganda. The effect of 8.5 million rubles obtained from the development and introduction of the plans for scientific organization of labor was significant.

As a result of fulfillment of the plans for technical development of production, the total increase in productivity of labor was 57 percent, and the production cost dropped by more than 60 percent.

The gross production volume in 1977 was 373.9 percent as compared to 1965; the volume of commercial production sales was tripled; the balanced income was increased by 59 times. During the same time the productivity of labor was tripled, which ensured the growth of the production volume and relieved about 2500 people for putting together new projects and expanding the operating shops and sections.

The enterprise collective led the production sales chart by 13 days, and profits by 39 days for the two years and nine months since the five-year plan began.

The reliable production rhythmicity without which normal functioning is unthinkable is attainable. Thus, in the first 10-day period of the second quarter of 1978, 33.9 percent of the production was produced, in the second, 33.3 percent and the third, 32.8 percent. This clear rhythmicity of production and production sales in the given nomenclature is ensured over the extent of more than 12 years without a single interruption.

The problem of environmental protection has been successfully solved at the combine. Since 1972 the central purification units have been in operation at the Zaporozh'ye Titanium and Magnesium Combine, and as a result the discharge of suspended matter with the industrial waste was reduced sharply. These materials which previously contaminated the Dnepr are now sold to the industrial building materials enterprises and other branches of industry.

The volumes of deliveries of waste are increasing constantly. The trapping of the side products after gas purification of the magnesium has led to the improvement of cleanliness of the air in the city and has made it possible to adjust the calcium hypochlorite output widely used in Zaporozh'ye and other cities of the republic for decontamination of domestic waste water. This work is continuing also with respect to the continuation of a wasteless process which will open up great prospects for the development of production.

The successful operation of the combine would be impossible without such a recognized collective director as the party organization which is the spirit of the collective. All of this multifaceted work is aimed at education of a communist attitude toward labor in the people, a sense of government and party responsibility for the matter at hand and solidarity of the collective.

In the already mentioned lead article of PRAVDA, the stability of the achievements of the combine is explained as follows:

"...All of this is caused to a decisive degree by the friendly work, the spirit of comraderie and solidarity which supports and develops in all elements of the many thousand person collective its experienced corps--the party organization of the combine."

Now the party advanced guard of the combine has at least 2,000 enthusiasts. And these are the best furnace workers and electrolyzer operators, the most active inventors and efficiency experts. They are heads of the production sections and research laboratories. They conduct a patent search and information work on social principles, and they are propagandists in the party education system. Each of them has won respect in the collective for his innovative attitudes toward his business and his tireless labor.

V. D. Zhilovskiy has worked for more than two decades, for example, as a furnace operator. In the sponge titanium shop he has become a highly qualified specialist and joined the party. He has manifested an inclination toward patronage work with the students (already for several years in a row he has been head of the council of mentors of the combine). The national recognition of V. D. Zhilovskiy has been expressed in the conferring of the rank of Hero of Socialist Labor on him. The friends of V. D. Zhilovskiy have warmly congratulated him in 1976 when he was awarded the USSR State Prize for outstanding service to labor: the execution of the counterplans, realization of measures with respect to improving the productivity of labor, ensurance of economic conditions and the development of the mentor movement.

People compete with A. A. Smirnov who works in the raw material preparations shop. He has been elected member of the party committee of the combine and shop partbyuro more than once. In the All-Union Competition for best titanium slag furnace operators' brigade, held in 1976 in Bereznik,

first place was taken by the Zaporozh'ye brigade headed by A. A. Smirnov. He shared his experience with the other combine workers at the school of advanced methods of labor which he directed. As a result, the productivity of labor was increased, giving a savings of 10,000 rubles.

The other communists leading the competition also won great respect: honored efficiency expert of the republic, furnace operator F. D. Samelyuk, honored metallurgist and electrolyzer operator Ye. I. Latysh and G. K. Sivak, bearer of the Order of Labor Glory, Third Degree, foreman V. M. Skil'sar and many others.

On the eve of Metallurgist's Day, the USSR Ministry of Nonferrous Metallurgy and the Central Committee of the Trade Union of Workers in the Metallurgical Industry congratulated the combine workers on taking first place in the All-Union Socialist Competition with respect to the results of the second quarter of 1978. The assumed obligation--to take first place for the fiftieth time--was fulfilled. The collective also won first place for the third quarter.

In discussing the letter of the Central Committee of the CPSU, the USSR Council of Ministers, the All-Union Central Trade Union Council, and the Central Committee of the All-Union Lenin Young Communists League "On Development of Socialist Competition for Fulfillment of the 1978 Plan and Intensification of the Struggle to Increase the Production Efficiency and Work Quality," the combine metallurgists gave their word to make the third year of the Tenth Five-Year Plan a year of shock labor.

Thirteen brigades of leading occupations of the branch enterprises for completion of the assignment of three years and three and a half years of the five-year plan by 7 October--the anniversary of the new Constitution of the USSR--held the initiative in the collective. On that celebration day, 99 collectives--2,144 workers--completed the 3 year assignment, 11 people completed the production assignments for 4 years, and silicon furnace operator I. I. Ishchenko began to work toward the next, Eleventh Five-Year Plan.

Delegate of the 18th Congress of the All-Union Lenin Young Communists League A. Gamal' is steadily working. The shift Grupkomsorg uses the example of his diligent attitude toward his work. In two years of the five-year plan this young worker fulfilled his personal plan by more than 400 days and achieved a high annual production yield with buildup of the most complex types.

"The best examples of high-efficiency labor--the standard for everyone!" --this is the goal set in the third year of the five-year plan by the unit members A. A. Atamas' and I. V. Vidysh. Their initiative, which was approved by the directorate, the party committee and the trade union committee was supported also in the other shops.

The spirit of competition took over all of the labor collectives, and an effort was made to move forward in all areas.

The socialist competition at the combine has broadened and gained strength.

The collective of the Zaporozh'ye Titanium-Magnesium Combine is distinguished by many good qualities. However, they would all be depreciated if there were not a constant sense of unrest which is consistently and persistenly educated in the metallurgists by the party organization. This is why it has become possible from quarter to quarter to win first place in the All-Union Socialist Competition of the Workers of Nonferrous Metallurgy.

It is in this marvelous unrest that we have the guarantee that the labor feats of the Zaporozh'ye Titanium-Magnesium Combine will continue.



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